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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/673,635	09/30/2003	Norio Nakamura	009270-0306047	1125

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EXAMINER

EISEN, ALEXANDER

ART UNIT PAPER NUMBER

2629

DATE MAILED: 06/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n N .

10/673,635

Applicant(s)

NAKAMURA ET AL.

Examiner

Alexander Eisen

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-- The MAILING DATE f this communication appears on the cover sh et with the corresp ndence address --

Period f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7-9 is/are allowed.
- 6) ☒ Claim(s) 4 and 6 is/are rejected.
- 7) ☒ Claim(s) 1-3 and 5 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Objections

2. Claim 1 is objected to because of the following informalities: claim 1 recites in lines 21-22: "said analog signal". There is no sufficient antecedent basis for such limitation. Apparently it was meant to be "said analog signals". Appropriate correction is required.
3. Claim 4 is objected to because of the following informalities: claim 4 recites "third signal lin s" in line 13 (i.e. "e" is missing between "n" and "s"; p. 26, line 2). Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 4 and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Azami, US 6,702,407 B2.

With respect to claim 4 Azami discloses a display device (FIG. 1) and a method associated therewith comprising first, second and third display pixels regularly disposed in a matrix form to display first, second and third color images, respectively; first, second and third

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signal lines SL connected to the first, second and third display pixels, respectively; first, second and third reference gray scale signal circuits to output first, second and third reference gray scale signals Vref-A, Vref-G, Vref-B (FIG. 2) corresponding to the first, second and third color images, respectively; a digital-to-analog conversion circuit (D/A conversion circuit in FIG. 1) to convert digital video signals corresponding to the first, second and third signal lines to analog signals in response to the reference gray scale signals; and a signal supply circuit (source line selecting circuits in FIG. 1) to supply the analog signals to the signal lines as video signals; wherein the signal supply circuit includes: a first switch SL1 to connect the first signal line to the digital-to-analog conversion circuit during a first period during which the first reference gray scale signal is outputted; a second switch SL2 to connect the second signal line to the digital-to-analog circuit during a second period during which the second reference gray scale signal is outputted; and a third switch SL3 to connect the third signal line to the digital-to-analog circuit during a third period during which the third reference gray scale signal is outputted (see FIGS. 1-2; col. 5, line 14 – col. 6, line 24).

As pertaining to claim 6, the first reference gray scale signal R is smaller than the second reference gray scale signal G and the second reference gray scale signal is smaller than the third reference gray scale signal B.

Allowable Subject Matter

6. Claims 7-9 are allowed.

7. The following is an examiner's statement of reasons for allowance: none of the prior art, either singularly or in combination, teach or fairly suggest a method of driving a display device comprising disposing first, second and third display pixels regularly in a matrix form to display

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first, second and third color images, respectively; connecting first, second and third signal lines to the first, second and third display pixels, respectively; outputting first, second and third reference gray scale signals corresponding to the first, second and third color images, respectively; making a digital-to-analog conversion circuit convert digital video signals corresponding to the signal lines to analog signals in response to the first, second and third reference gray scale signals; supplying the analog signals to the signal lines as video signals; connecting the first, second and third signal lines to the digital-to-analog circuit during a first period during which the first reference gray scale signal is outputted; connecting the second and third signal lines to the digital-to-analog circuit during a second period during which the second reference gray scale signal is outputted; and connecting the third signal line to the digital-to-analog circuit during a third period during which the third reference gray scale signal is outputted.

8. Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Claims 1-3 would be allowable if the deficiency in claim 1 pointed in the section 2 of current Office action was corrected. The following is an examiner's statement of reasons for allowance: no prior art has been found by the examiner that suggested a combination with or a modification of the cited prior art so as to arrive to the invention of claim 1; namely a display device comprising display pixels disposed in a matrix form to display color images; driving circuits to drive said display pixels; and first, second and third signal lines to connect said display pixels to said driving circuits; wherein said driving circuits include a reference gray scale

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signal circuit to sequentially provide a predetermined number of reference gray scale signals in accordance with color characteristics of said display pixels when writing operations are carried out on said signal lines during each horizontal scanning period, a digital-to-analog conversion circuit to convert digital video signals supplied to said display pixels in response to said reference gray scale signals to analog signals; and a signal supply circuit to provide said analog signals to said first, second and third signal lines; wherein said signal supply circuit provides said analog signal to said first signal lines as video signals when said reference gray scale signals are supplied in response to said color characteristics of said display pixels and outputs said analog signals to said second and third signal lines as preliminary (i.e. pre-charging) video signals when said video signals are supplied to said second and third signal lines in each scanning period.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nose, US 6,879,310 B2, discloses switchable three-color gray scale reference and D/A converter for driving a display.

Maki, US 7,034,797 B2, discloses drive circuit with overlapping periods of driving pixel of different colors.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Eisen whose telephone number is (571) 272-7687. The examiner can normally be reached on M-F (9:00-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (571) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Alexander Eisen
Primary Examiner
Art Unit 2629

2 June 2006